

Work Order ID 57235

March 30, 2010 2:19:25 PM



Page 1

Item ID: D212-664-201

Accept



Setup Start



Revision ID:

Item Name: Crosstube Aft

Stop



Start Date: 30/03/2010 Start Qty: 1.00



Cust Item ID:

Required Date: 16/04/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan: *M*

Date: 10-3-30 Tooling: _____ Date: _____

Run Start



QC: _____

Date: _____ SPC (Y/N): _____ Date: _____

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run HoursDraw
NumberDraw
Rev.Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

Draw Nbr	Revision Nbr
D212-664-241	Rev D

100

0.00



DOCUMENT CONTROL

DC

Document Control

Memo

0.00

Photocopy bluefile and create labels as per PPP D212-664-201

CHG003

S 10/05/20

110

0.00



Packaging

Pick Kit
Packaging

Memo

0.00

(1X) 10-05-04

120

0.00



CNC Bend 2

BENDING MACHINE - CROSSTUBES

Memo

0.00

CNC Alpha 160 Bender

Bend tube as per Dwg D212-664-241 using CNC bender program 212-af and Folio FT007

(1X) 10-05-04

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

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Customer:

Reference:

Approvals: Process Plan: _____

Date: _____

Tooling: _____

Date: _____

Run Start



QC: _____

Date: _____

SPC (Y/N): _____

Date: _____

Stop

Sequence ID/
Work Center ID

130



QC

Quality Control

Operation
Description

QC15- Crosstube Dimensional Check

Set Up/
Run Hours

0.00

Draw
Number

Draw
Rev.

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

140



Crosstubes

Crosstubes

0.00

Memo

0.00

1-Drill pilot holes in tube as per Dwg D212-664-241 using drill Jig DT8550 & DT8551

2-Ream hole to finish size in tube as per Dwg D212-664-241 using drill Jig DT8550 & DT8551. Check dimensions between holes, both sides on both cuffs, to ensure alignment with saddle holes.

3-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D212-664-241

4-Scribe part # and batch # using vibrating stylus as per Dwg D212-664-241

AWM MB JK Q MBS 10-05-05

AWM 10-05-05

MB 10-05-05

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Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run

Start



QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/
Work Center ID

150



HandFXtube

Operation
Description

Crosstubes Chemical Conversion

Set Up/
Run Hours

0.00

Draw
NumberDraw
Rev.Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

Hand Finishing Crosstubes

Memo

0.00

160



QC

Quality Control

QC3- Inspect Part Finish

0.00

6/10/05/05

1

-

AWM
10-3-5

170



QC

Quality Control

QC5- Inspect part completeness to step on W/O

0.00

0.00

6/10/05/05

4



W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run

Start



QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/
Work Center ID

180

Operation
DescriptionSet Up/
Run HoursDraw
NumberDraw
Rev.Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

Outsource process - NDT per QSI038 4.1

0.00

CZ 10/5/16 ①

Outsource2

Memo

0.00

Outsource process - NDT

Liquid Penetrant Inspection as per QSI 038
Issue P/O: 11844
LPI as per ASTM 1417 Level 2
Attach copy of NDT results to work order

190



Receive & Inspect for Damage & Mat'l Certs

0.00

Packaging

Memo

0.00

Packaging

Ensure copy of NDT results attached to work order.

P10/5/16 ①

200



QC5- Inspect part completeness to step on W/O

0.00

QC

Memo

0.00

Quality Control

Inspect for damage & ensure results are as per Dwg D212-664-241

ML 10 05 07 ①

W/O:		WORK ORDER CHANGES					
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Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run HoursDraw
NumberDraw
Rev.Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

210



Spray Painting per QSI005 4.2

0.00

 10 05 13(1)

SprayPaint

Memo

0.00

Spray Painting

1-Prime inside and outside crosstube as per QSI 005 4.2
2-Paint outside crosstube with White Imron as per QSI 005 4.2

PRIME:

Start Time: 9:00

Finish Time: 10:30

PAINT:

Start Time: 2:30

Finish Time: 3:30

220



QC14- Inspect Spray Paint

0.00

 10-05-14

QC

Quality Control

Memo

0.00

Then, Wrap in plastic bag to protect from scratches

W/O:		WORK ORDER CHANGES					
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Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run HoursDraw
NumberDraw
Rev.Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

230



Crosstubes

Crosstubes

0.00

m/ 10 05 17 (1)

Crosstubes

Memo

0.00

1- Lightly scuff the bonded area using a 320 grit sand paper and clean the area
with 41058 wash 'n' wipe

2-Install supports with magnobond as per QSI 015 Adhere for for 12 Hrs

A/R 6398 Magnobond Batch: 111021Expiry Date: 01/20113-Install clamps as per Dwg D212-664-241. Torque clamps to 80-100 in lb. *m/ 10-05-19*

240



QC

QC5- Inspect part completeness to step on W/O

0.00

S. w/ 05/19

Quality Control

Memo

0.00

QD

W/O:		WORK ORDER CHANGES					
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Cust Item ID:

Required Date: 16/04/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan: _____

Date: _____

Tooling: _____

Date: _____

Run Start



QC: _____

Date: _____

SPC (Y/N): _____

Date: _____

Stop

Sequence ID/
Work Center ID

250



Packaging

Packaging

Operation
Description

Pick Kit

Set Up/
Run Hours

0.00

Draw
Number

Rev.

Draw
Plan

Code

Accept
QtyReject
QtyReject
Number

Stamp

10-5-1981

Insp.
Stamp

260



QC

Quality Control

QC4- 100% Inspect kits for completeness

0.00

8.10.05/20

(+1)

270



Packaging

Packaging

Packaging

0.00

Memo

0.00

Identify and pack for shipping as per PPP D212-664-201

Nurk 4/05/2006

W/O:		WORK ORDER CHANGES					
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Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
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Cust Item ID:

Required Date: 16/04/2010 Req'd Qty: 1.00



Customer:

Reference:

Approvals:

Process Plan:

Date:

Tooling:

Date:

Run

Start



QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run HoursDraw
NumberDraw
Rev.Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

280

QC21- Final Inspection - Work Order Release

0.00



QC

Memo

0.00

Quality Control

10/05/21 JJ

W 10-05-20

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
 Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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NOTE: Date & initial all entries

Picklist Print

Page 1

March 30, 2010 2:19:29 PM

Work Order ID: 57235



3

Parent Item: D212-664-201



Parent Item Name: Crosstube Aft

Start Date: 30/03/2010

Required Date: 16/04/2010

Comments: IPP Rev:E 04.02.16 Reformat K/DS

Start Qty: 1.00

Required Qty: 1.00

IPP Rev:F 06-03-29 Remove Coments on Pick List JLM

IPP Rev:G 07-04-30 As per Rev C JLM

IPP Rev:H 08-05-22 up date Qty of rubber cushion DD verified by:EC

D212-664-201TRN

Manufactured

No

110

Each

1.0000

1.0000



3-57197 MB 10-05-04

Crosstube Turning Detail

<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
------------------	----------------	-----------------

Location

Main Warehouse

LG

1

46386

1

D3595-063-530

Manufactured

No

230

Each

132.0000

2.0000



RUBBER CUSHION

<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
------------------	----------------	-----------------

Location

Main Warehouse

FP

132

40780

2

44998

2

50030

24

51776

104

M 10.05.17

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
 Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

Picklist Print

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Page 2

Work Order ID: 57235



Parent Item: D212-664-201



Parent Item Name: Crosstube Aft

Start Date: 30/03/2010

Required Date: 16/04/2010

Comments: IPP Rev:E 04.02.16 Reformat K/DS

Start Qty: 1.00

Required Qty: 1.00

IPP Rev:F 06-03-29 Remove Coments on Pick List JLM

IPP Rev:G 07-04-30 As per Rev C JLM

IPP Rev:H 08-05-22 up date Qty of rubber cushion DD verified by:EC

D2940-1

Manufactured No

230

Each

43.0000

2.0000



Support

<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
<u>Location</u>		
Main Warehouse		
LG	43	
24367	4	
25594	2	
45203	1	
47748	16	
<u>52752</u>	20	

ML 10.05.17

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
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Picklist Print

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March 30, 2010 2:19:29 PM

Work Order ID: 57235



Parent Item: D212-664-201



Parent Item Name: Crosstube Aft

Start Date: 30/03/2010

Required Date: 16/04/2010

Comments: IPP Rev:E 04.02.16 Reformat K/DS

Start Qty: 1.00

Required Qty: 1.00

IPP Rev:F 06-03-29 Remove Coments on Pick List JLM

IPP Rev:G 07-04-30 As per Rev C JLM

IPP Rev:H 08-05-22 up date Qty of rubber cushion DD verified by:EC

MS21920-28

Purchased No

230

Each

154.0000 4.0000



Clamp(per MIL-DTL-8783C)

W 10.05.17

<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
------------------	----------------	-----------------

Location

OFFSHORE

FG	5	
----	---	--

105884	5	
--------	---	--

Main Warehouse

LG	149	
----	-----	--

106864	5	
--------	---	--

108466	9	
--------	---	--

108847	7	
--------	---	--

109181	14	
--------	----	--

109965	2	
--------	---	--

111281	2	
--------	---	--

111734	6	
--------	---	--

112624	4	
--------	---	--

112863	50	
--------	----	--

<u>113776</u>	50	
---------------	----	--

D3428-1

Manufactured No

250

Each

16.0000 1.0000



Placard

16-5-19

<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
------------------	----------------	-----------------

Location

Main Warehouse

ST056	16	
-------	----	--

<u>55565</u>	16	
--------------	----	--

March 30, 2010 2:19:29 PM

Shop Packet Print

Page 3

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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Start Date: 30/03/2010

Required Date: 16/04/2010

Comments: IPP Rev:E 04.02.16 Reformat K/DS

Start Qty: 1.00

Required Qty: 1.00

IPP Rev:F 06-03-29 Remove Coments on Pick List JLM

IPP Rev:G 07-04-30 As per Rev C JLM

IPP Rev:H 08-05-22 up date Qty of rubber cushion DD verified by:EC

MS21042L6

Purchased No

250

Each

332.0000 6.0000



10-5-2010 SP 8

Nut

<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
------------------	----------------	-----------------

Location

Main Warehouse

ST300	332	
105077	22	
110002	5	
111578	305	

AN960JD616

Purchased No

250

Each

233.0000 18.0000



1113524 10-5-2010

Washer

<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
------------------	----------------	-----------------

Location

Main Warehouse

ST347	233	
112314	3	
112828	1	
113149	229	

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Comments: IPP Rev:E 04.02.16 Reformat K/DS

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Required Qty: 1.00

IPP Rev:F 06-03-29 Remove Coments on Pick List JLM

IPP Rev:G 07-04-30 As per Rev C JLM

IPP Rev:H 08-05-22 up date Qty of rubber cushion DD verified by:EC

AN6-40A

Purchased

No

250

Each

102.0000 4:0000



10-5-20 S

Bolt

<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
------------------	----------------	-----------------

<u>Location</u>

Main Warehouse

ST343	102	
112612	1	
112679	1	
112828	50	
113422	50	

AN6-41A

Purchased

No

250

Each

92.0000 2.0000



10-5-20 S

Bolt

<u>Warehouse</u>	<u>Loc Qty</u>	<u>Loc Code</u>
------------------	----------------	-----------------

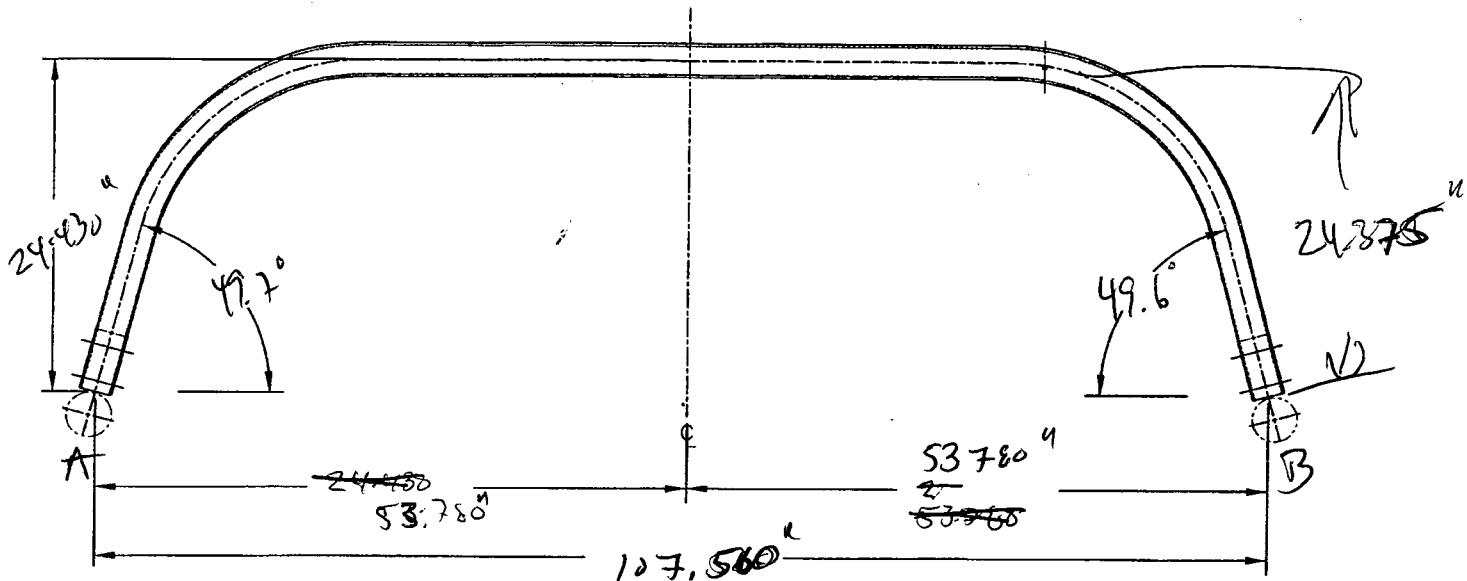
<u>Location</u>

Main Warehouse

ST344	92	
112489	17	
112805	25	
113288	50	

DART AEROSPACE LTD	Work Order:	57235
Description: Crosstube High Aft (205/212)	Part Number:	D212-664-201
Inspection Dwg: D212-664-241 Rev: C D 12		Page 1 of 1

Required Dimension	Min	Max
Height	24.17	24.43
1/2 Span	53.59	53.85
Angle	49	52
Total Span	107.18	107.70



Comments

QC15 Inspection	✓
Date	2005/4

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	
B	07.05.08	Dimensions updated per Dwg rev. C	KJ/JLM	✓

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NOTE: Date & initial all entries

8 7 6 5 4 3 2 1

Item	Qty -241	Qty -241B	Part Number	Description
1	X		D212-664-241	CROSSTUBE ASSEMBLY (205/212 HIGH AFT)
2		X	D212-664-241B	CROSSTUBE ASSEMBLY (214 HIGH AFT)
3	1	1	D6006-129	CROSSTUBE
4	2	2	D2940-1	SUPPORT
5	4	4	D3595-063-530	RUBBER CUSHION
6	4	4	MS21920-28	CLAMP (OR MS21920-30)
7	A/R	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

GENERAL NOTES:

- 1) MATERIAL: MANUFACTURED FROM D6006-129
FINISHED LENGTH = 124.362 ± 0.020
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER "D212-664-XXX" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS.
- 7) WEIGHT: D212-664-241 = 44.2 lbs (PER IIN-D212-664)
D212-664-241B = 44.2 lbs (PER IIN-D212-664)
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) RUN CUTTER OFF PART. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 5 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2940-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 TO THE SURFACE OF D2940-1 THAT WILL BE IN CONTACT WITH THE CROSSTUBE PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 13) INSTALL MS21920-28 CLAMPS (OR -30) WITH D3595-063-530 RUBBER CUSHIONS TO SECURE THE D2940-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMPS ARE OPPOSITE OF CROSSTUBE SUPPORT.
- 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

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WITHOUT NOTICE

WORK ORDER

NO. 57235

pd 10-3-30

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2009-10-29
MP

D	REFORMAT/REVISE GENERAL NOTES/PART LIST; REORGANIZED VIEWS AND REFORMATTED DRAWING TO CURRENT STANDARDS; ADD -241B (ZN D4-2, B4-2); REMOVED REF & ADD TOLERANCES (ZN D8-3 & C4-3, C6-3 & A8-3); RELOCATED FLAG #6 PER PAR 08-046 (ZN A5-3); MOVED TURNING DETAIL & UPDATED TOLERANCE TO SHEET 4	RF	09.09.30
C	REMOVE -1009 ABRASION STRIP; ADD MAGNOBOND 6398, CUSHION, REVERSE CLAMPS	PH	07.03.08
B	ADD HOLES FOR COMPATABILITY WITH BHT/AA SKIDTUBES	PH	05.02.04
A	NEW ISSUE	PH	00.12.12
REV.	DESCRIPTION	BY	DATE
DESIGN	<i>MP</i>	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	<i>MP</i>	DRAWING NO.	REV. D
MFG. APPR.	<i>MP</i>	D212-664-241	SHEET 1 OF 4
APPROVED	<i>MP</i>	TITLE	SCALE
DE APPR.	<i>MP</i>	CROSSTUBE ASSY (205/212 HI AFT)	NTS
DATE	09.09.30	COPYRIGHT © 2009 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL, AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	

8 7 6 5 4 3 2 1

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____
 Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

D

□

C

8

B

1

A

A

Technical drawing showing a curved tube assembly. The tube is labeled 'D212-664-601 BENT TUBE'. At the top left, callouts point to 'A5-2' and 'A'. Callout 'A' points to a support detail with the following part numbers: D2940-1 SUPPORT, MS21920-28 CLAMP, 2X, and D3595-063-530 RUBBER CUSHION, 2X. Callout 'A5-2' points to a similar support detail. A dimension line indicates a width of 14.00 (-241) OR 13.75 (-241B). A vertical dashed line is labeled 'C' and 'SYM' at the bottom. A callout 'D' points to a triangular warning symbol.

WFO 57235

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[Signature]

Diagram illustrating the assembly of the D2940-1 support structure. The main view shows a circular cross-section with a central tube and a flange. Callout 12 points to the text "APPLY MAGNOBOND BETWEEN D2940-1 AND CROSSTUBE". Callout 13 points to the text "MS21920-28 CLAMP SET". Callout 15 points to the text "D3595-063-530 RUBBER CUSHION UNDER CLAMP, REF". Callout 16 points to the text "D2940-1 SUPPORT, REF".

SECTION A-A D6-2
SCALE 4X

DESIGN	PH	DART AEROSPACE LTD	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	90	DRAWING NO.	REV. D
MFG. APPR.	DS	D212-664-241	SHEET 2 OF 4
APPROVED	AD	TITLE	SCALE
DE APPR.	HF	CROSSTUBE ASS'Y (205/212 HI AFT)	
DATE	09.09.30	NTS	

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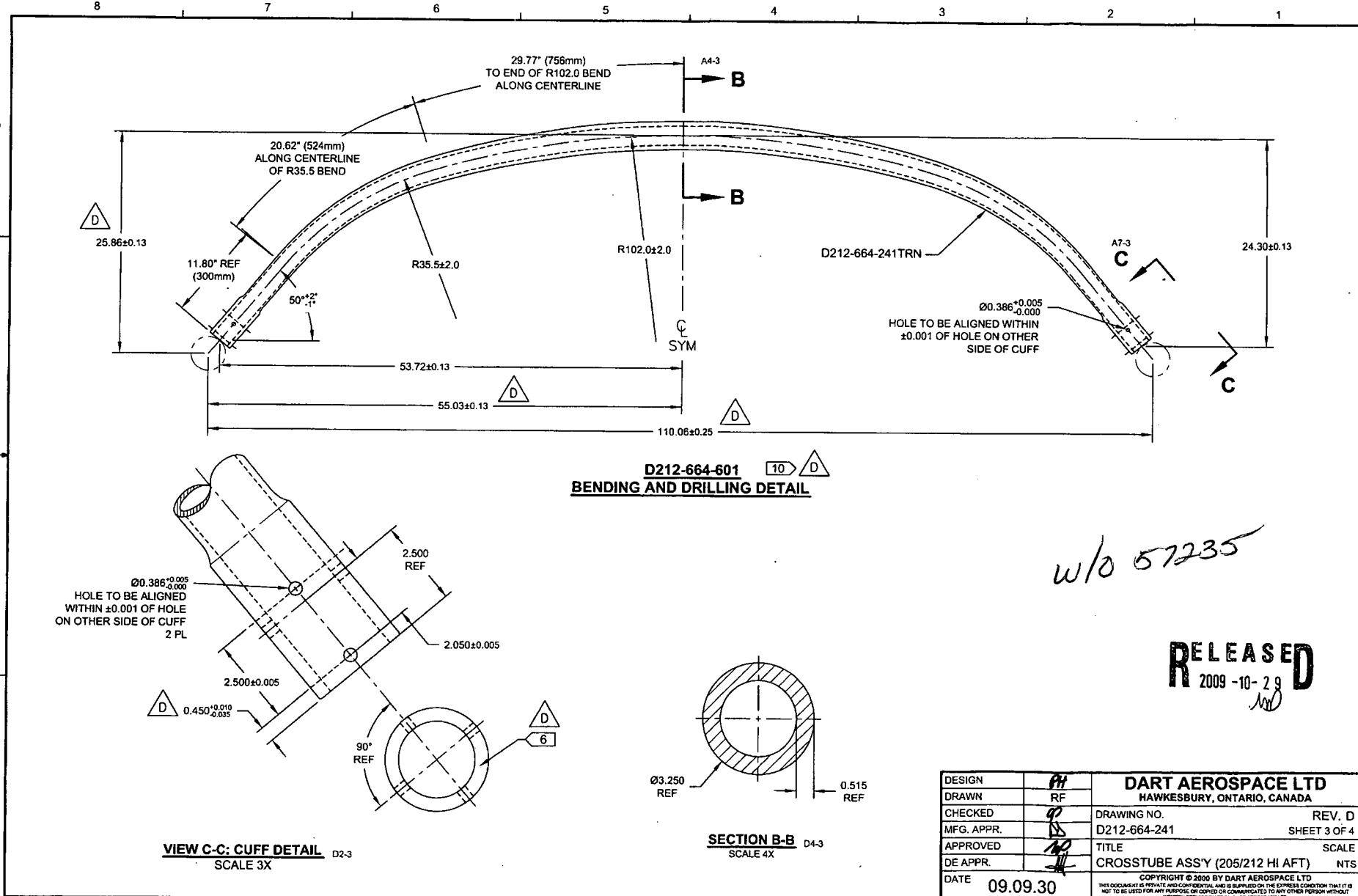
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 Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



DESIGN	RF	DART AEROSPACE LTD
DRAWN		HAWKESBURY, ONTARIO, CANADA
CHECKED	RF	REV. D
MFG. APPR.	RF	DRAWING NO.
APPROVED	RF	D212-664-241
DE APPR.	RF	SCALE
DATE	09.09.30	CROSS TUBE ASSY (205/212 HI AFT) NTS

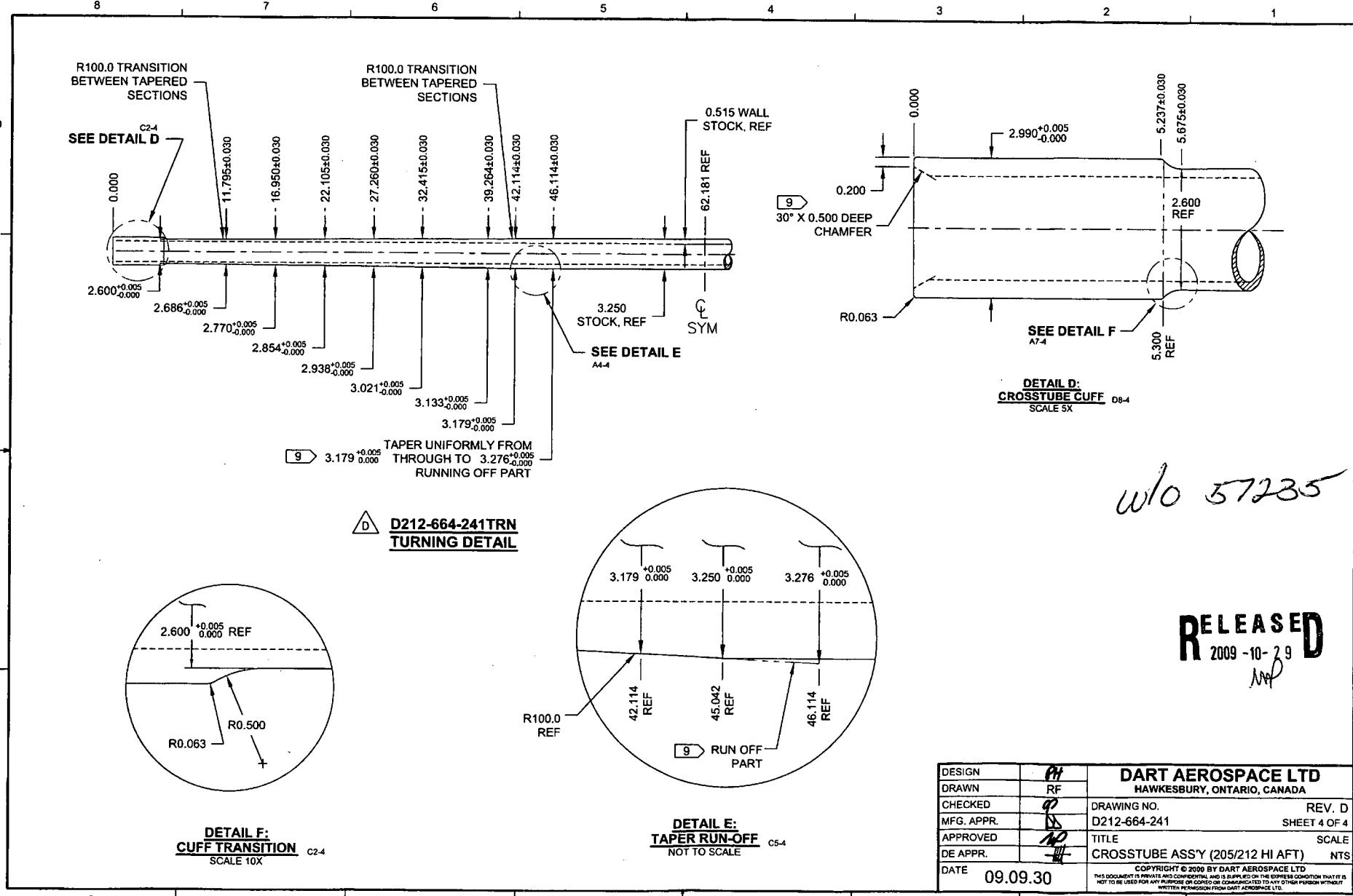
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 Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



WFO 57235

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2009-10-29

DESIGN	PH	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	RF		
CHECKED	90	DRAWING NO.	REV. D
MFG. APPR.	DS	2D12-664-241	SHEET 4 OF 4
APPROVED	ND	TITLE	
DE APPR.	MM	SCALE	
DATE	09.09.30	CROSSTUBE ASSY (205/212 HI AFT) NTS	

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Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

A P PENDIX E LIST

REFERENCE ONLY

a1 SPARE PART CROSSTUBES

	1-701	-203	Part Number	Description
			D212-664-101	CROSSTUBE INSTALLATION 204/205/210/212/214/412, UH-1H, UH-1A/B/E/F/L/P, TH-1F/L, HH-1K HIGH FWD
	X		D212-664-201	CROSSTUBE INSTALLATION, 204/205/210/212/214, UH-1A, UH-1A/B/E/F/L/P, TH-1F/L, HH-1K HIGH AFT
	X		D412-664-203	CROSSTUBE INSTALLATION, 412 HIGH AFT
			D212-664-141	CROSSTUBE ASSEMBLY 204/205/210/212/214/412, UH-1H UH-1A/B/E/F/L/P, TH-1F/L, HH-1K HIGH FWD
			D212-664-241	CROSSTUBE ASSEMBLY 204/205/210/212/214, UH-1H UH-1A/B/E/F/L/P, TH-1F/L, HH-1K HIGH AFT
	1		D412-664-243	CROSSTUBE ASSEMBLY 412 HIGH AFT
			* D2893-1	SUPPORT
			* D3595-063-450	RUBBER CUSHION
			* MS21920-25	CLAMP (OR MS21042-2)
			AN6-35A	BOLT
			AN6-36A	BOLT
			MS21042L6	NUT (OR MS21042-6)
			AN960JD616	WASHER
			* D2940-1	SUPPORT
			* D3595-063-530	RUBBER CUSHION
			* MS21920-28	CLAMP (OR MS21042-30)
			AN6-40A	BOLT
			AN6-41A	BOLT
			MS21042L6	NUT (OR MS21042-6)
			AN960JD616	WASHER
	1		* D2896-1	SUPPORT
	2		* D2856-600-1009	ABRASION STRIP
	2		* D3595-063-570	RUBBER CUSHION
	4		* MS21920-28	CLAMP
	2		* MS21920-30	CLAMP (OR MS21042-32)
	4		AN6-40A	BOLT
	2		AN6-41A	BOLT
	6		MS21042L6	NUT (OR MS21042-6)
	18		AN960JD616	WASHER
	2		* D3189-1	CHAFING SHIELD
	1		D3428-1	PLACARD

THE PARTS LISTED ABOVE ARE INCLUDED IN D212-664-141/241 OR D412-664-243 ASSEMBLIES ABOVE
AND ARE NOT INCLUDED IN THE SPARE PARTS LIST AS THEY ARE NOT EXTRA HARDWARE FOR COMPATIBILITY WITH BOTH DART AND PELLMAA

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

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DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries



LIQUID PENETRANT TEST REPORT

P- 05485

CLIENT	DART AEROSPACE			DATE	MAY/06/2010		PAGE <u>1</u> OF <u>1</u>
ATTENTION	LINDA KROZIE / HAWKES BURY / HAW			ACUREN JOB NO.	188-10-0676		TIME AM <input checked="" type="checkbox"/> PM <input type="checkbox"/>
ADDRESS	1270, ABERDEEN ST. HAWKES BURY, ON			PO/WO NO.	HR444		
PROJECT	FPI ON 6 X "CROSS TUBES"			WORK LOCATION	AS A ADDRESS		
ITEM(S) EXAMINED	SEE W.O. # BELOW			ACCEPTANCE STD.	ASTH1417/051-033		REV./DATE 2005
JOB DESCRIPTION	PROCEDURE NO. LT-002 REV./DATE 2008			TECHNIQUE NO.	LT-002 REV./DATE 2008		
PART NO.				MATERIAL	Alodine Aluminum		THICKNESS
SCOPE	Performed a Wet-Fluorescent - Liquid Penetrant inspection on 100% of THE EXTERNAL SURFACE						
TEST DETAILS							
METHOD	<input checked="" type="checkbox"/> FLUORESCENT	<input type="checkbox"/> VISIBLE	<input type="checkbox"/> WATER WASH	<input type="checkbox"/> SOLVENT REMOVABLE	<input type="checkbox"/> POST EMULSIFIED		
FAMILY BRAND	MAGNA Flux			BLACK LIGHT S/N 13798	<input checked="" type="checkbox"/> OUTPUT > 1000 μ W/CM ²	<input checked="" type="checkbox"/> AMBIENT < 2 fc	
PENETRANT	22-67	MINIMUM DWELL TIME	10 MIN.	LIGHTING EQUIP.	<input checked="" type="checkbox"/> FLASHLIGHT	<input type="checkbox"/> TROUBLELIGHT	<input type="checkbox"/> OUTPUT > 100 fc @ SURFACE
PENETRANT REMOVER	WATER	MINIMUM DRY TIME	>10 MIN.	OTHER			
DEVELOPER	SKD-52	MINIMUM DWELL TIME	10 MIN.	LIGHT METER S/N	CAL DUE DATE MAY/06/2011		
DEVELOPER TYPE	<input type="checkbox"/> NON AQUEOUS	<input type="checkbox"/> AQUEOUS	<input type="checkbox"/> DRY				
TEST SURFACE							
SURFACE CONDITION	<input type="checkbox"/> AS GROUND	<input type="checkbox"/> AS WELDED	<input type="checkbox"/> MACHINED	<input type="checkbox"/> SHOT BLASTED	<input checked="" type="checkbox"/> CLEAN BARE METAL		
SURFACE TEMPERATURE	<input type="checkbox"/> < -4°C/ 20°F	<input type="checkbox"/> -4°C/ 20°F TO 10°C/50°F	<input checked="" type="checkbox"/> 10°C/50°F TO 52°C/125°F	<input type="checkbox"/> > 52°C/125°F			
RESULTS- <input type="checkbox"/> METRIC <input checked="" type="checkbox"/> IMPERIAL							
ITEM	<p>WET FLUO L.P.I. ON 100% EX. SURF.</p> <p>1 CROSS TUBE - W.O. ID 57235 ✓</p> <p>2 CROSS TUBE - W.O. ID 57236 ✓</p> <p>3 CROSS TUBE - W.O. ID 58187 ✓</p> <p>4 CROSS TUBE - W.O. ID 58188 ✓</p> <p>5 CROSS TUBE - W.O. ID 56797 ✓</p> <p>6 CROSS TUBE - W.O. ID 56798 ✓</p>						
	<p>"CROSS TUBE"</p>						
	<p>ITEM ID: - D212-664-201 (VIEW 1-2)</p> <p>- D212-664-203 (VIEW 3-4)</p> <p>- D407-667-205 (VIEW 5-6)</p>						

Scope of Services

The agreement of Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly understood that all descriptions, comments and expressions of opinion reflect the opinions or observations of Acuren Group Inc. based on information and assumptions supplied by the owner/operator and are not intended nor can they be construed as representations or warranties. Acuren Group Inc. is not assuming any responsibilities of the owner/operator and the owner/operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a result of the data or other information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.

Standard of Care

In performing the services provided, Acuren Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, expressed or implied, is made or intended by Acuren Group Inc.

SIGNATURES

CLIENT REPRESENTATIVE	<u>Zane Tolley</u> PRINT	<u>Zane Tolley</u> SIGNATURE	DTR # E48632	
TECHNICIAN (SIGNATURE):	<u>Yves Desjardins</u>			REPORT REVIEWED BY:
NAME (PRINT):				NAME INITIALS
CGSB LEVEL	1 ST TECHNICIAN	2 ND TECHNICIAN	CGSB LEVEL	SNT LEVEL
CGSB REG. NO.	3049		CGSB REG. NO.	

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